Potentiometric Surface Map of the Bedrock Aquifers of Hendricks County, Indiana

by
Robert K. Schmidt
Division of Water, Resource Assessment Section
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Hendricks County, Indiana is located in the central portion of the state and is almost entirely within the White and West Fork White River Basin with the exception of the northwest corner. The county is bounded by Putnam, Montgomery, Boone, Marion, and Morgan counties to the west, northwest, north, east and south respectively.

The Potentiometric Surface Map (PSM) of the bedrock aquifers of Hendricks County was mapped by contouring the elevations of over 1300 static water-levels reported on well records received primarily over a 50 year period. These wells are completed in bedrock aquifers at various depths, and typically, under confined conditions (bounded by impermeable layers above and below the water bearing formation). However, some wells were completed under unconfined (not bounded by impermeable layers) settings. The potentiometric surface is a measure of the pressure on water in a water bearing formation. Water in an unconfined aquifer water table is at atmospheric pressure and will not rise in a well above the top of the water bearing formation, in contrast to water in a confined aquifer which is under hydrostatic pressure and will rise in a well above the top of the water bearing formation.

Universal Transverse Mercator (UTM) coordinates for the water wells were either physically obtained in the field, determined through address geocoding, or reported on water well records; however, the location of the majority of the water well records used to make the PSM were not field verified. Elevation data were either obtained from topographic maps or a digital elevation model. Quality control/quality assurance procedures were utilized to refine or remove data where errors were readily apparent.

Portions of Hendricks County were not mapped due to a general lack of water well data and/or limited water bearing deposits (see Aquifer Systems Map 69-B; Bedrock Aquifer Systems of

Hendricks County, Indiana; Schmidt, 2010). These areas are generally considered to have limited bedrock aquifer resources leaving it difficult to represent accurate PSM elevations.

Static water-level measurements in individual wells used to construct county PSM's are indicative of the water-level at the time of well completion. The groundwater level within an aquifer constantly fluctuates in response to rainfall, evapotranspiration, groundwater movement, and groundwater pumpage. Therefore, current site specific conditions may differ due to local or seasonal variations in measured static water-levels. Because fluctuations in groundwater are typically small, static water-levels can be used to construct a generalized PSM. Groundwater flow is naturally from areas of recharge toward areas of discharge. As a general rule, but certainly not always, groundwater flow approximates the overlying topography and intersects the land surface at major streams.

Bedrock static water levels in Hendricks County range from a high of 1022 feet mean sea level (msl) in the west-central section of the county, to a low of 527 feet msl in the southeastern portion. Groundwater flow direction in the northwestern section of the White and West Fork White River Basin is toward West Fork Big Walnut Creek. In the eastern portions of the county, groundwater flow is generally toward White Lick Creek, and in the southwest, groundwater flow is to the south-southwest.

The county PSM can be used to define the regional groundwater flow path and to identify significant areas of groundwater recharge and discharge. County PSM's represent overall regional characteristics and are not intended to be a substitute for site-specific studies.